Wireless Solutions in the Port Environment

Drivers of Wireless Applications Within the U.S. Coast Guard

TELISPARK

The drivers for using wireless solutions in the U.S. Coast Guard include the need to share more information, increase maintenance efficiency, and improve readiness

Wireless Technology is Needed Where:

- Transactions conducted at <u>point-of-work</u>

- Current, accurate information is needed in <u>real-time</u>

- Non-productive time is costly

- <u>Mobile workforce</u> exists

- <u>High level of compliance</u> required

Coast Guard Applicability:

- MSO inspections, LE boardings, port security detachments and patrols

- Aircraft and shipboard maintenance

- Day to day engineering and maintenance rounds

- Mobile workers in the form of inspection and law enforcement teams

Wireless Applications and Solutions

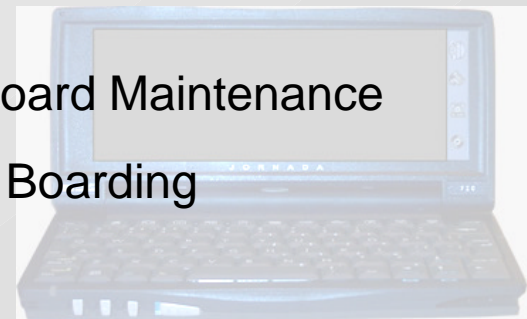# Mobile Computing Related to USCG Missions

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Challenges

- Disparate backend systems

- Demand for real time accurate data

- Expansive deployment of mobile workers

- Challenging operating environments

Mobile Application Areas

- Data Collection

- Aircraft and Shipboard Maintenance

- Law Enforcement Boarding

- Asset Tracking

- Etc……

Mobile Requirements for the Enterprise

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Reliability

- **Needs to work in or out of network coverage**

- **Hardened devices compatible with the work environment**

- **Standardized, proven, and reliable technologies**

- **Secure communications**

Ease of use

- **Unified access to backend systems, transparent upgrades to the user**

- **Simple user interface and intuitive screen navigation**
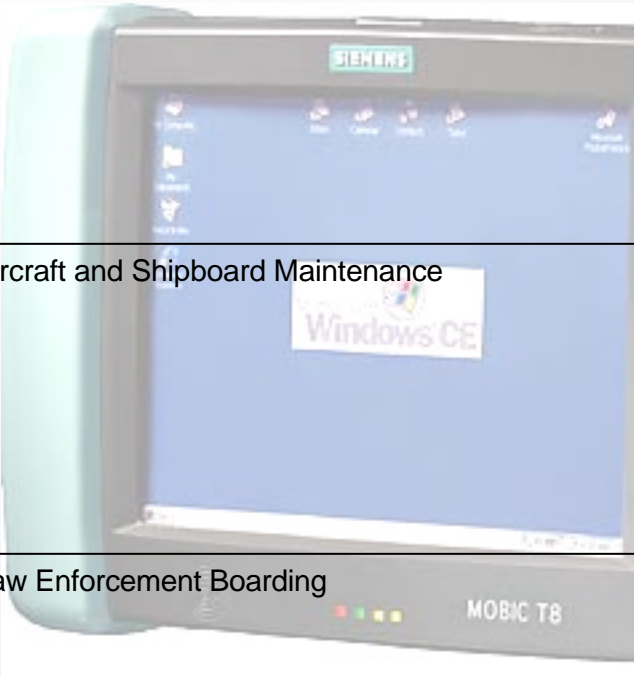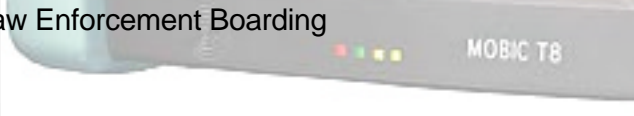
Scalability

- **Redundancy, fail over, performance and systems replication as needed to meet evolving mission needs.**

Flexibility

- **User friendly, easy to maintain**

- **Configurable to match specific mission processes**

- **Many different devices, networks, and backend systems**

Mobile Application Benefits

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Mobile Application	Features	Benefits
Data Collection	• Inspection forms • Audit checklists • Electronic logs	• Improved data accuracy • Ensures compliance with inspection criteria • Real time data verification/validation • Streamlined data/communication flow
Aircraft and Shipboard Maintenance	• Real time maintenance schedules and updates • Vessel age and maintenance history • Real time configuration updates • Maintenance manuals • Spare parts availability	• Increased readiness • Improved safety • Increased efficiency • Reduced cost • Decreased mean time to repair
Law Enforcement Boarding	• Vessel inspection history • Vessel and crew photos • Security alerts	• Instant access to critical security information • Leverage information from multiple agencies
Asset Tracking	• Parts tracking • Equipment configurations • Inventory reconciliation • Reservation lists	• Increased readiness • Reduce inventory costs • Improve inventory forecasting • Reduced stock-outs

Summary

- **Support existing mobile business processes**

- **Leverage existing and future backend systems investments, including integration to multi-agency systems**

- **Ensure the ability to have maintain critical information in and out of communications coverage**

- **Bottom Line - Empower the Fleet to make mission critical decisions**

Contact Information

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Seaport Security

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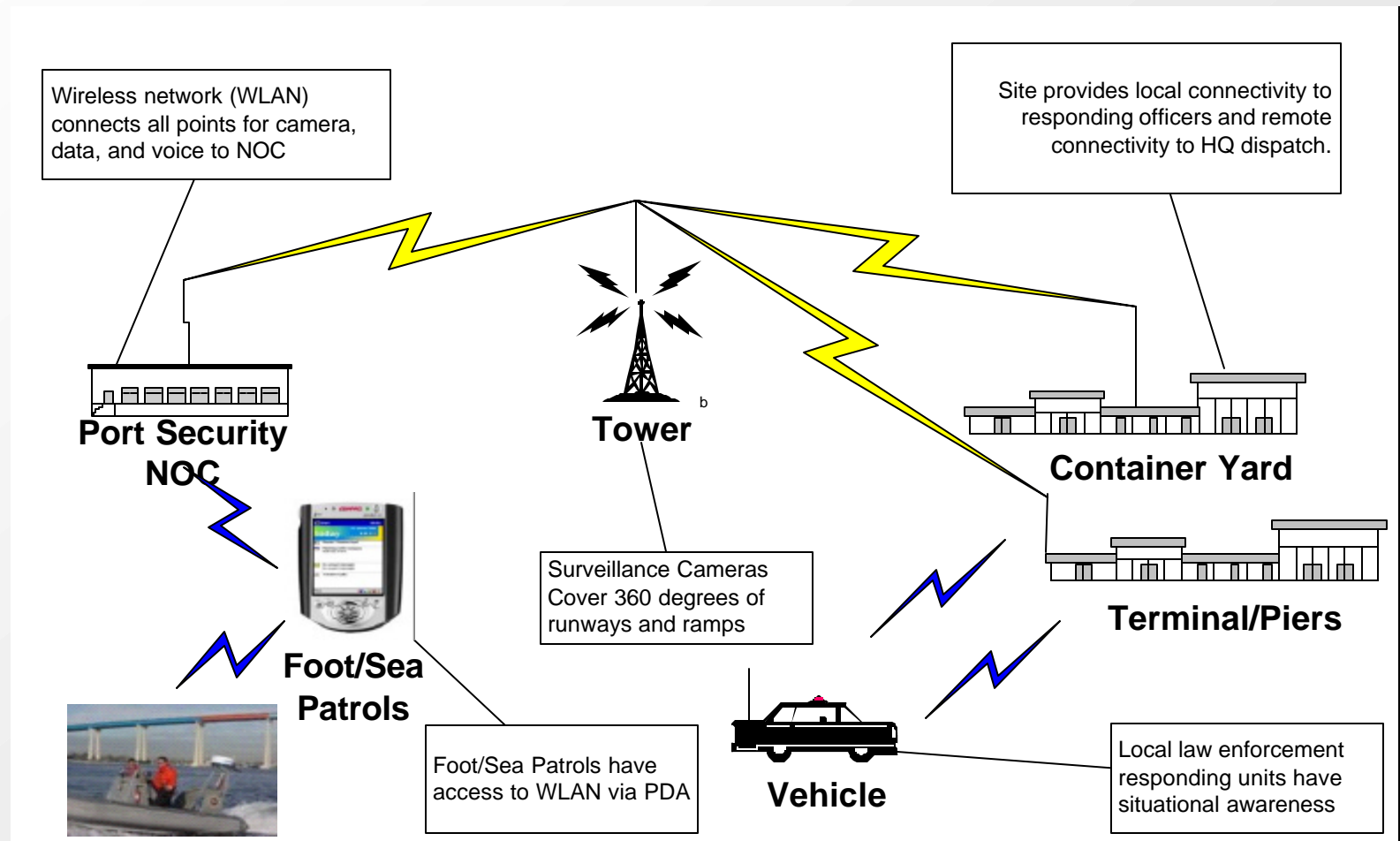**Federal Business Development Manager**

CISCO SYSTEMS

Inter-Modal Security

"Over two billion tons of goods move through U.S. ports. This volume is expected to more than double over the next 20 years. Cruise ships anticipate attracting 6.5 million passengers annually by the year 2002." Wm. Shubert, DOT Maritime Administrator.

REQUIREMENTS

- 360 degree 24/7/365 situational awareness

- Integration of Physical and Information Security Networks

- Standard Communications Platform for All Law Enforcement

- Secure Fixed, Mobile and Contingency Communications

- "Inter-Modal" Security Planning and Execution

- Cooperation with Shippers, Brokers, Chandlers, etc.

Enable Mission Critical Applications for Users in Motion

Wireless network (WLAN) connects all points for camera, data, and voice to NOC

Site provides local connectivity to responding officers and remote connectivity to HQ dispatch.

Port Security NOC

Tower

Container Yard

Surveillance Cameras Cover 360 degrees of runways and ramps

Foot/Sea Patrols

Terminal/Piers

Foot/Sea Patrols have access to WLAN via PDA

Vehicle

Local law enforcement responding units have situational awareness

Specifications

- **IEEE 802.11(b & a) Open Standard**

- **11- 54 Mb/s Throughput**

- **IPSec (Triple DES Encryption)**

- **Up to 20 Mile Range**

- **Interoperable with Mobile Router**

www.cisco.com

Custom Software Solutions for Enhancing Performance Using Wearable Augmented Reality Technologies

Sonny Kirkley, CEO

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812.856.4202

What if everybody wanted everything wirelessly?

- **Long-range communications**

   Ship-to-shore; Ship-to-ship communication

- **Ship Local Area Network (wLAN)**

- **Personal Area Network (wPAN)**

- **Features**

   Bandwidth

      Low and high

   Redundancy

   Intelligence for filtering and managing load

   Security

   Standards

Performance Enhancement

- **Mission Effectiveness**

  Enough bandwidth to make the job easier to do or even possible (latency)

  Data processing at best location including remote servers (thin clients)

- **Job Satisfaction**

  Fatigue; Perception of usefulness of technologies

- **Training and performance support of new and existing personnel on-the-job**

- **Reach many kinds of mariners with real-time data**

  From CG to merchant to recreation

Location-Intelligent Marine Information Services

Data Sources
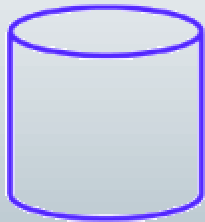
Spatial Waterways
 Database
AtoN
Special Notices
COTP Orders
Broadcast Notice to
 Mariners
Local Notice to
 Mariners
NOAA
Weather
Others…

Middleware

Geospatial Tools

XML Tools

Data Fusion &
Personalization

Wireless
Communication
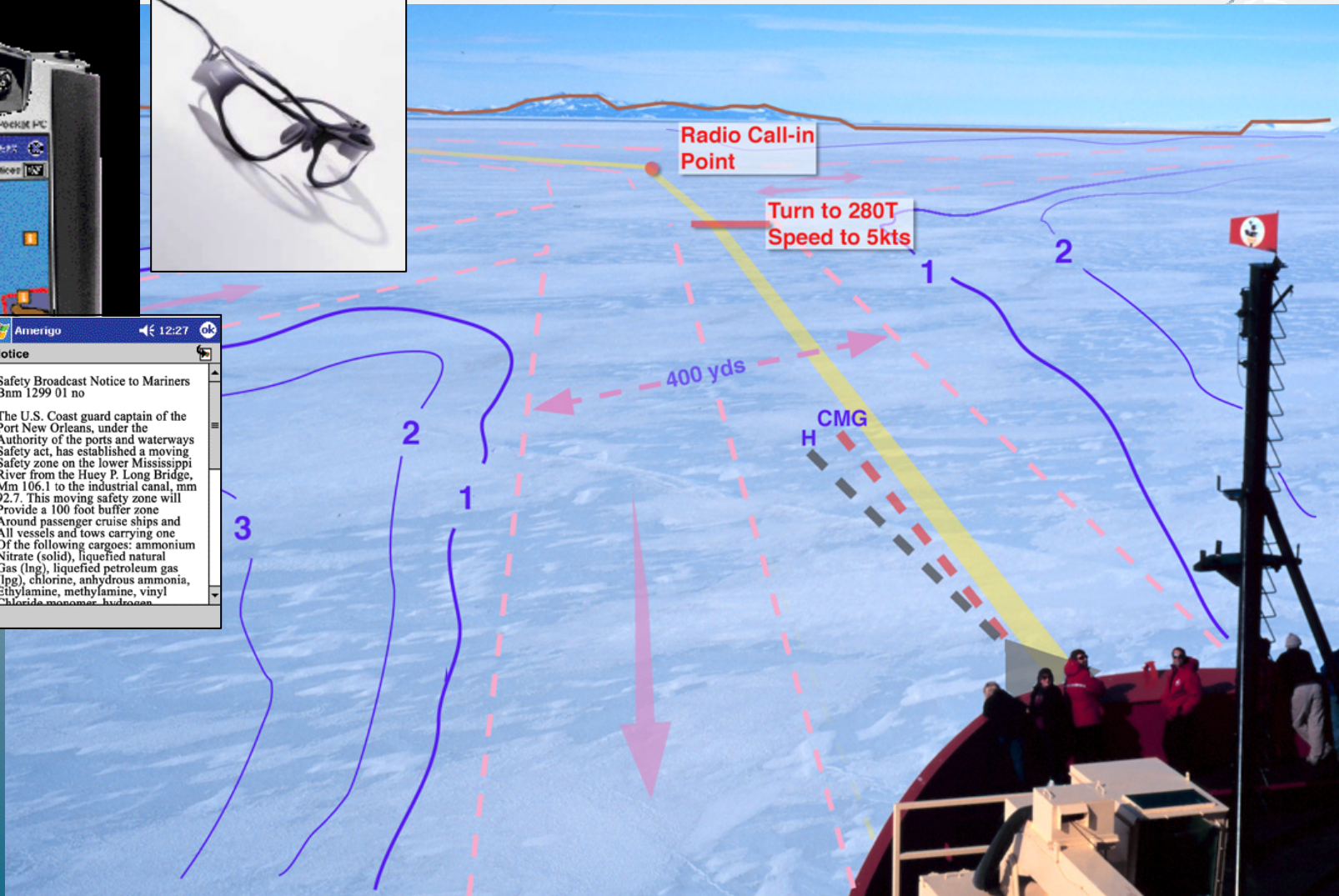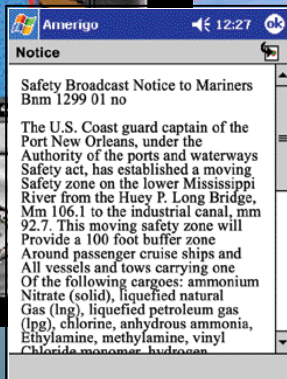
Device Specific
Tools

Many Devices
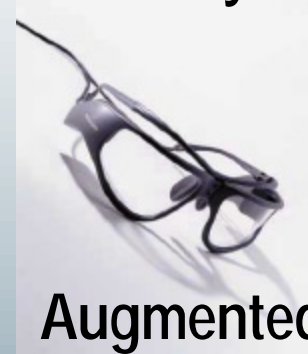
Augmented
Reality

Handheld
Computer

Cell Phone   ECDIS/ENC

virtual Aids to Navigation (*v*ATON)
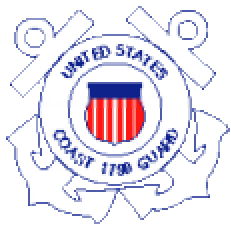
Security Monitoring

Key Message

- **Out of the box ideas will continually make demands on the infrastructure we are building.**

    Scalability and robustness
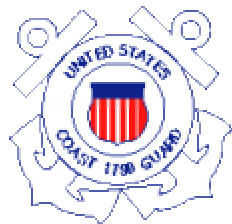
    Intelligence to manage bandwidth

Wireless Connectivity in the Coastal Sea Zone
A1NET

Wireless Deployable Radar Surveillance
RADNET

US Coast Guard
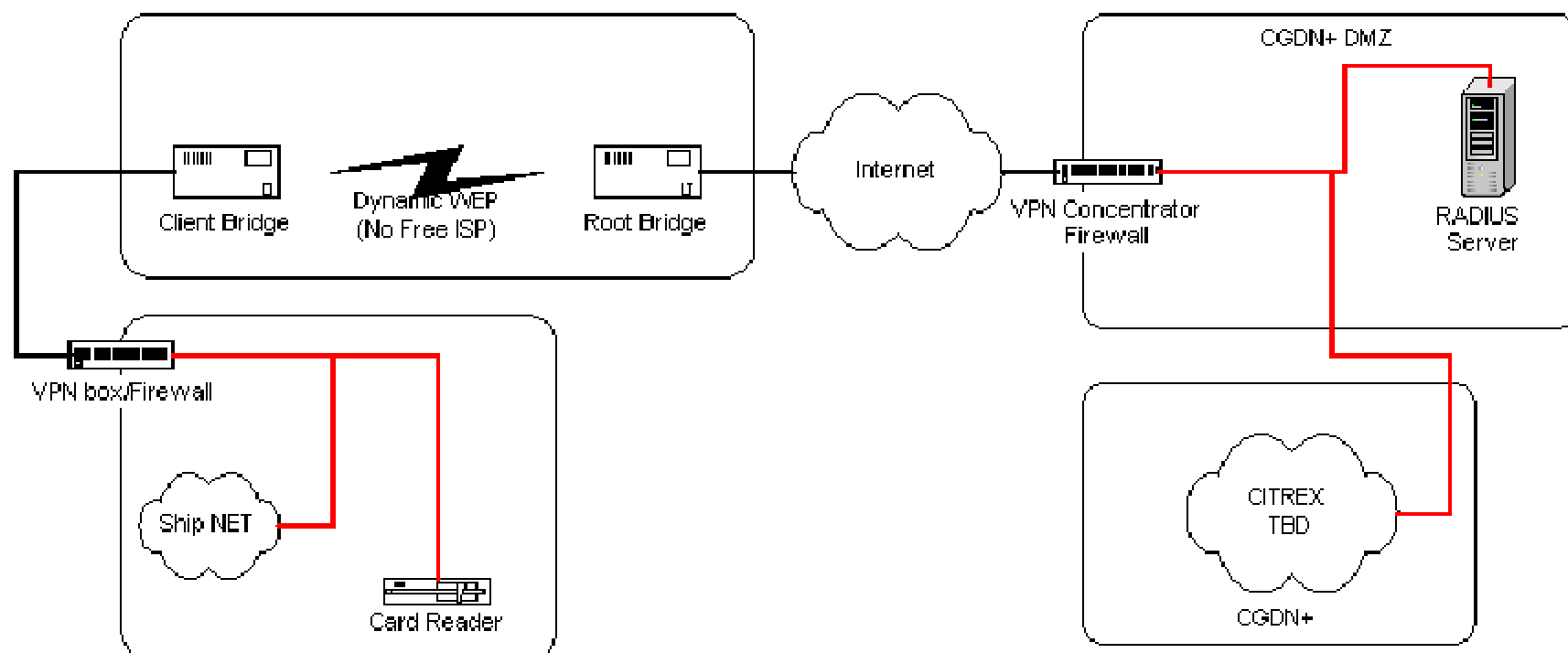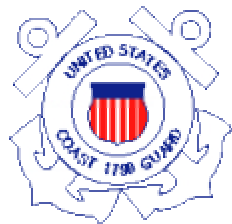Research and Development Center

A1NET Proposed Solution
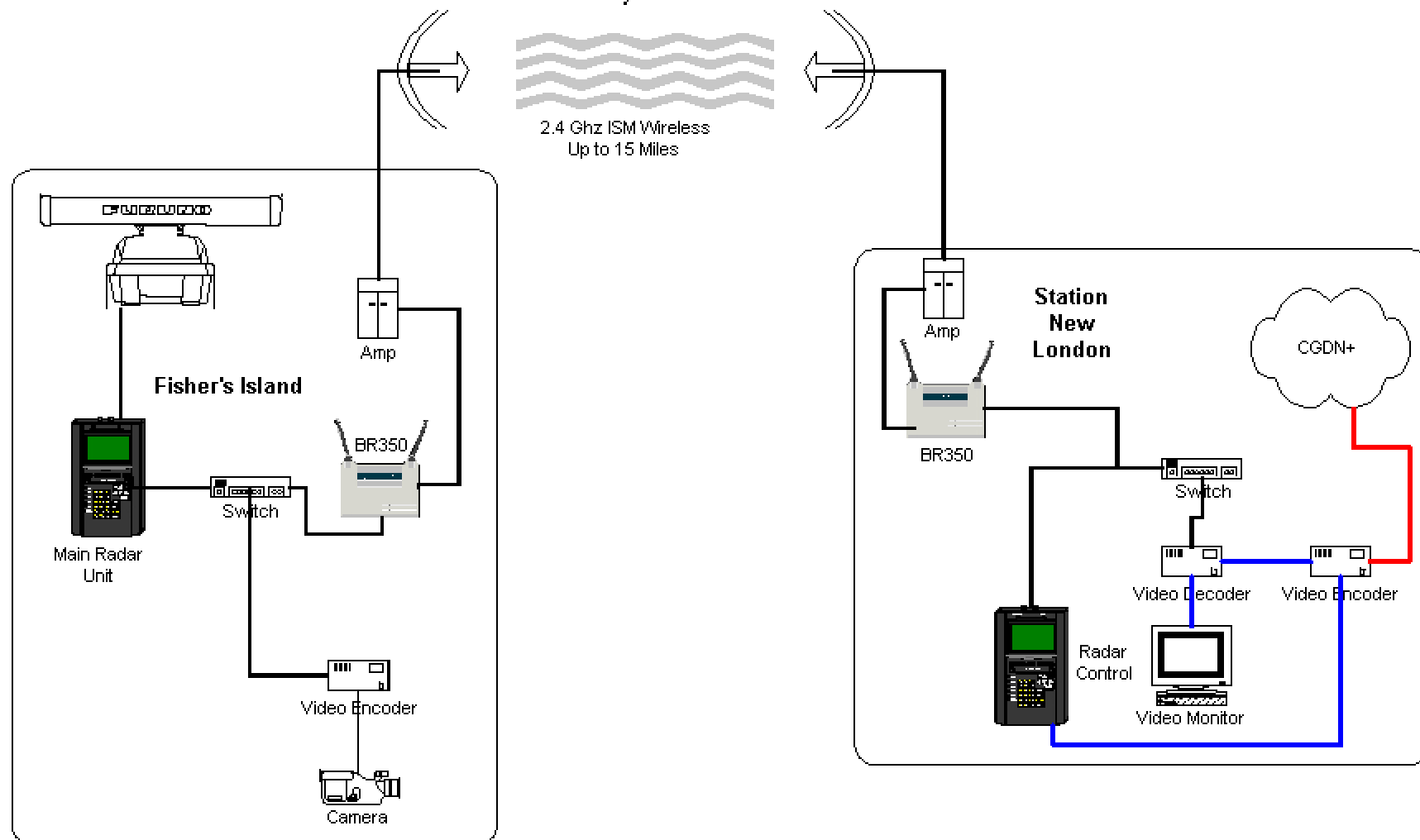

CGDN+ connectivity
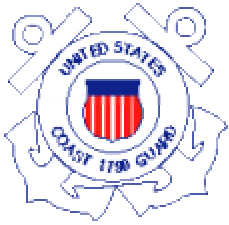Mobile IP solution for small cutters

RDC Long Island Sound (proto-type)

GRULIS Harbor Surveillance
System

2.4 Ghz ISM Wireless
Up to 15 Miles

Amp

Fisher's Island

BR350

Switch

Main Radar
Unit

Video Encoder

Camera

Station
New
London

Amp

BR350

CGDN+

Switch

Video Decoder

Video Encoder

Radar
Control

Video Monitor

Questions?

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Research and Development Center
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http://cgweb.rdc.uscg.mil:11666/a1net/index.htm